

Roll No. ....

Total No. of Questions : 13]

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## Paper ID [A0210]

(Please fill this Paper ID in OMR Sheet)

BCA (205) (S05) (O) (Sem. - 2<sup>nd</sup> )

### DIGITAL CIRCUITS & LOGIC DESIGN

Time : 03 Hours

Maximum Marks : 75

#### Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Nine** questions from Section - B.

#### Section - A

Q1)

(15 × 2 = 30)

- a) Convert the following hexadecimal numbers into decimal  
(i) 3FFE      (ii) 2180
- b) (10101) convert to Decimal Number system.
- c) What do you understand from propagation delay time?
- d) What is the use of karnaugh maps?
- e) What is the use of gray codes for number representation?
- f) Differentiate between combinational and sequential circuits.
- g) Give the advantages of edge triggered flip-flops.
- h) What is a race around condition?
- i) Explain NOR gate with truth table.
- j) Write the working of 4: 1 multiplexer.
- k) What is Encoder?
- l) Give advantages and disadvantages of synchronous over asynchronous counters.
- m) Give applications of shift registers.
- n) Give four possible modes of operation for registers.
- o) What is a ring counter?

A-67

P.T.O.

## Section - B

(9 × 5 = 45)

- Q2)** Draw the minimized logic circuit for the Boolean equation  
 $Y=A'B'C'D+AB'C'D+ABC'D+ABCD'$ .
- Q3)** How are AND, OR and NOT operations realized with NAND gates?
- Q4)** Convert decimal no. 100.55 into binary, octal codes.
- Q5)** State and discuss the De-Morgan's Theorem's.
- Q6)** Draw the circuit of a 3 to 8 decoder and explain its operation.
- Q7)** Explain code converters with example.
- Q8)** Draw and explain full adder using two multiplexers.
- Q9)** Discuss the working of JK master slave flip-flop.
- Q10)** Write short note on error detecting and correcting codes.
- Q11)** Discuss the working of synchronous counter.
- Q12)** Explain working of asynchronous counter.
- Q13)** Draw and explain 4 bit bi-directional shift registers.

